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Risk Perception and Trust

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Although experts explain risk assessment in plain language, the impact on the public is not so good. Why ?

1. Small influence of statistical information

Explanation by “dual-process theories” of thinking

2. Lack of trust

e.g., Explanation by Salient Value Similarity Theory

3. Composition of intuitive risk perception

e.g., Explanation by the two factor model(Slovic, 1987)

4. Difference in the perceived meaning of “probability”

Experts’ risk assessment ← Frequency probability

Individuals’ risk perception ← Subjective probability

Firstly, let me confirm the meaning of the risk assessment. Secondly, let me introduce an experiment of social psychology, and lastly let me explain the dual-process theories.

What is the risk assessment by experts?

→ Estimate the probability of an end point
(undesirable consequence)

ex. “The cancer death risk increases 0.56% by 100mSv dose”

In short, risk is the frequency probability intended for group.

Next step will be an experiment of social psychology.

You participated in a brief consumer survey.

- After completing the survey, you received ¥500 as the reward.
- You were informed of the opportunity to donate any of your just earned to Save the Children. Any money donated will go toward relieving the severe food crisis in Southern Africa.

Then, you are presented the information as follows.

Information in Condition 1

Rokia, a 7-year-old girl from Mali, Africa, is desperately poor and faces a threat of severe hunger or even starvation. Her life will be changed for the better as a result of your financial gift. With your support, and the support of other caring sponsors, Save the Children will work with Rokia's family and other members of the community to help feed her, provide her with education, as well as basic medical care and hygiene education.



A portrait of Rokia

How much will you donate?

Information in Condition 2

- Food shortages in Malawi are affecting more than 3 million children.
- In Zambia, severe rainfall deficits have resulted in a 42% drop in maize production from 2000. As a result, an estimated 3 million Zambians face hunger.
- Four million Angolans — one third of the population—have been forced to flee their homes.
- More than 11 million people in Ethiopia need immediate food assistance.

How much will you donate?

Information in Condition 3 –the combination of Condition 1 and 2 –

Rokia, a 7-year-old girl from Mali, Africa, is desperately poor and faces a threat of severe hunger or even starvation. Her life will be changed for the better as a result of your financial

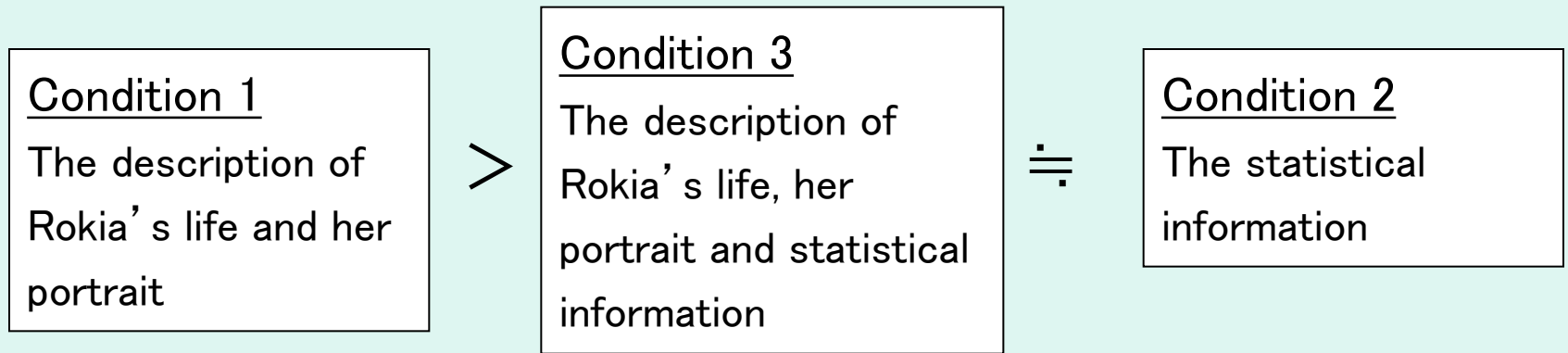


A portrait of Rokia

- Food shortages in Malawi are affecting more than 3 million children.
- In Zambia, severe rainfall deficits have resulted in a 42% drop in maize production from 2000. As a result, an estimated 3 million Zambians face hunger.

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How much will you donate?



Mean donations by condition (Small *et al.*, 2008)

People are much more willing to aid identified individual.

→ Identifiable Victim effect

Statistical information doesn't drive us (instead, a kind of obstacle)

Why? → Explanation by dual-process theories

Dual-process theories

We have two fundamentally different modes of thinking.

Experiential System (System1)	Analytical System (System 2)
Holistic	Analytic
Affective: pleasure-pain oriented	Logical: reason oriented
Connections by association	Connections by logical assessment
Behavior mediated by feelings from past experiences	Behavior mediated by conscious appraisal of events
Encodes reality in images, metaphors, and narratives	Encodes reality in abstract symbols, words, and numbers
More rapid processing: oriented toward immediate action	Slower processing: oriented toward delayed action
Self-evidently valid: “experiencing is believing”	Requires justification via logic and evidence

Epstein(1994), Sloman (1996), Slovic et al.(2004), etc.

Which system is more dominant, Experiential one (System 1) or Analytical one (System 2) ?

Humans have survived the long course of evolution

- lived in groups of several dozen familiar members
- did hunting and gathering which needs quick decision-making

→ Although everyone has the both systems, Experiential System is more dominant in our ordinal judgment and decision making.

Let's rethink the risk in the above.

“The cancer death risk increases 0.56% by 100mSv dose”

- The risk assessment by experts is based on the data or model

~ It needs generality without personality.

- It is hoped that risk assessment come from (experts')

Analytical System and is understood by (public's) Analytical System.

However, Experiential System is more dominant in the public's judgment and decision making in their daily life.

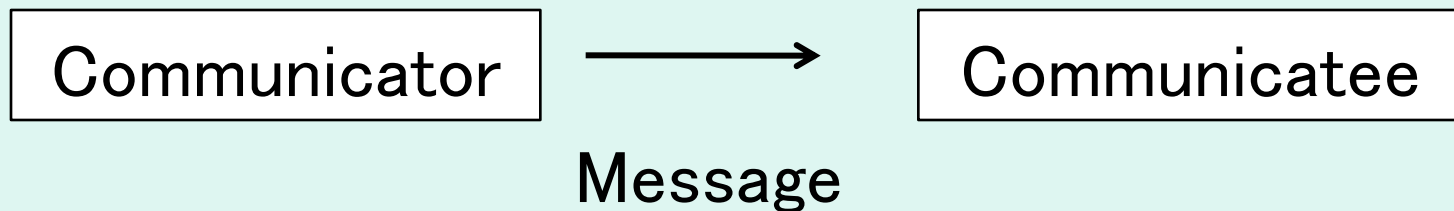
Therefore, risk information can be understood, but has small impact.

2. Misunderstanding the structure of trust by experts

What determines the level of trust?

Research in social psychology started in 1940s.

e.g., Yale Communication and Attitude Change Program



The study of communicator credibility in those days has led to trust research in recent times.

What communicator credibly reaches an audience?

Hovland & Weiss (1951)

Topic: Sale of antihistamine drug without prescription

High credibility: The New England Journal of Medicine

Low credibility: A popular magazine

Topic: Practical use of nuclear submarine

High credibility: Dr. Oppenheimer

Low credibility: Pravda

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Let me summarize the knowledge of research in the past.

The two factors determining the level of trust are;

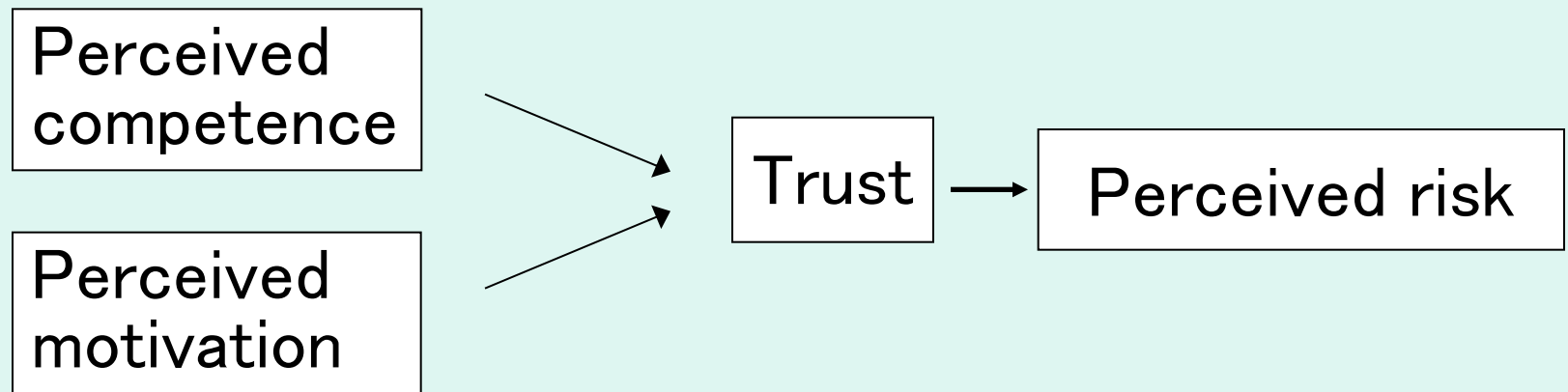
- perceived competence

 - expertise, experience, capacity, . . .

- perceived motivation

 - fairness, integrity, hardworking, . . .

In fact, a lot of results of empirical research support the standard model of following.



Practically, these kind of trustworthy refinements are implemented.

However, is this obvious model enough?

Salient Value Similarity (SVS) model

(Earle & Cvetkovich, 1995)

Salient values (SVs) are the individual's representations of the goals and means in responding to a problem. They include implicit and explicit meanings including an understanding of what problem is being faced, what options are available, and the likely consequences of options.

If the other person's SVs are similar to own SVs, that individual will be deemed trustworthy.

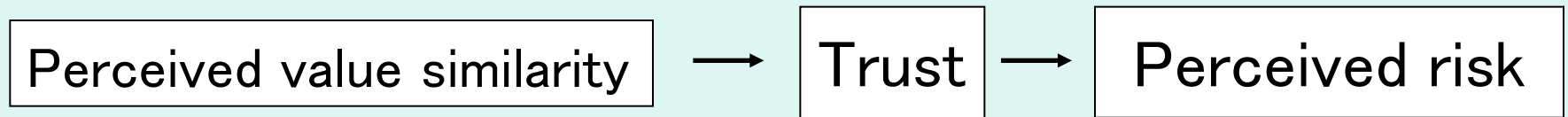
Perceived value similarity



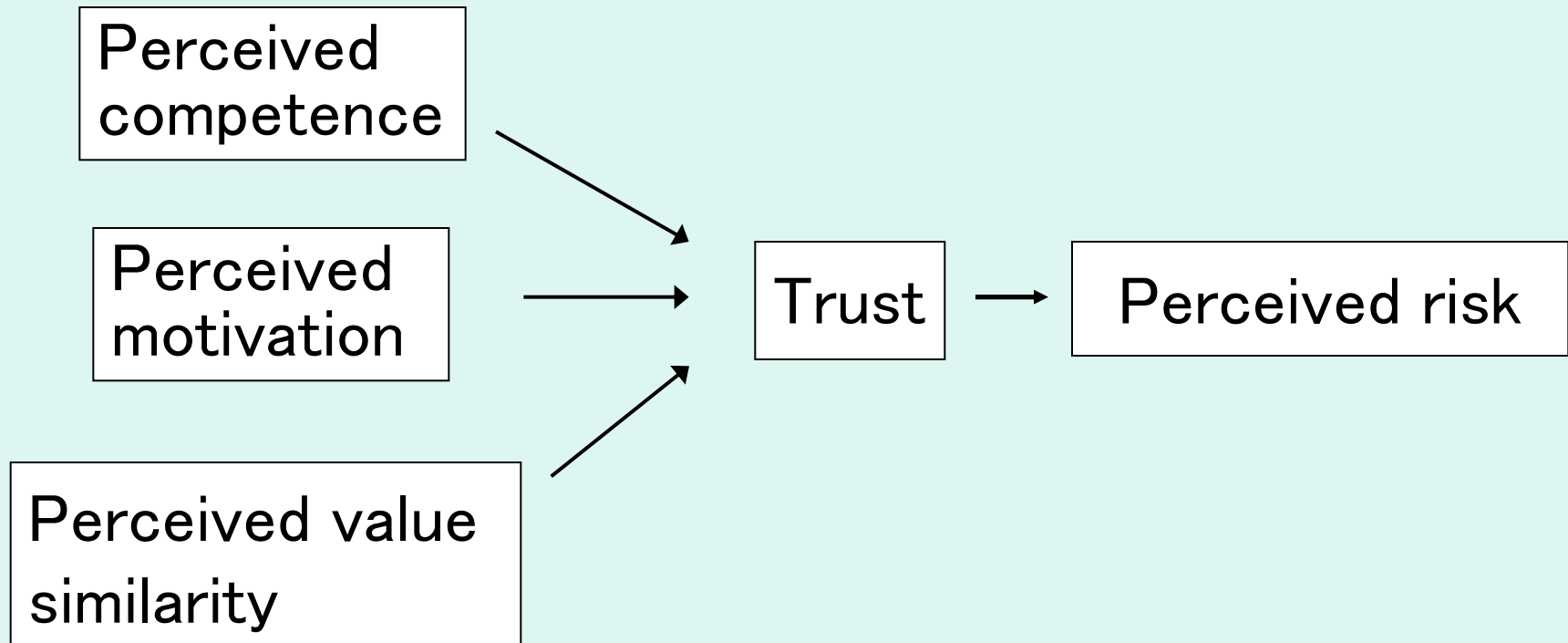
Trust



Perceived risk



What is the strongest determinant in the three?



Trust in organizations concerned with risks of the Great East Japan Earthquake

Nakayachi, Kudo & Ozaki (in press)

Date of survey. 25–26 April, 2011

Participants and Method. Participants (1030 adults) registered with an survey company to complete the survey. They accessed the designated web site to respond to the questions.

Organizations Targeted: Tokyo Electric Power Company (TEPCO),
The Nuclear and Industrial Safety Agency (NISA),
The Earthquake Research Institute (ERI),
The Meteorological Research Institute (MRI),
The Food Safety Commission (FSC),
East Japan Railway Company (JR East),
Kansai Electric Power Company (KEPCO),
West Japan Railway Company (JR West)

Participants rated each item on five-point scales by organization.

- Perceived competence

Expert, Capable, Specialized

- Perceived motivation

Dedicated, Diligent, Enthusiastic

- Perceived value similarity

See in the same way, Have the same feeling,

Place emphasis on the same value

- Trust

Trustworthy, Reliable, Dependable

- Evaluation of risk management

Increase social safety, remove the risk to the people,
prevent disaster

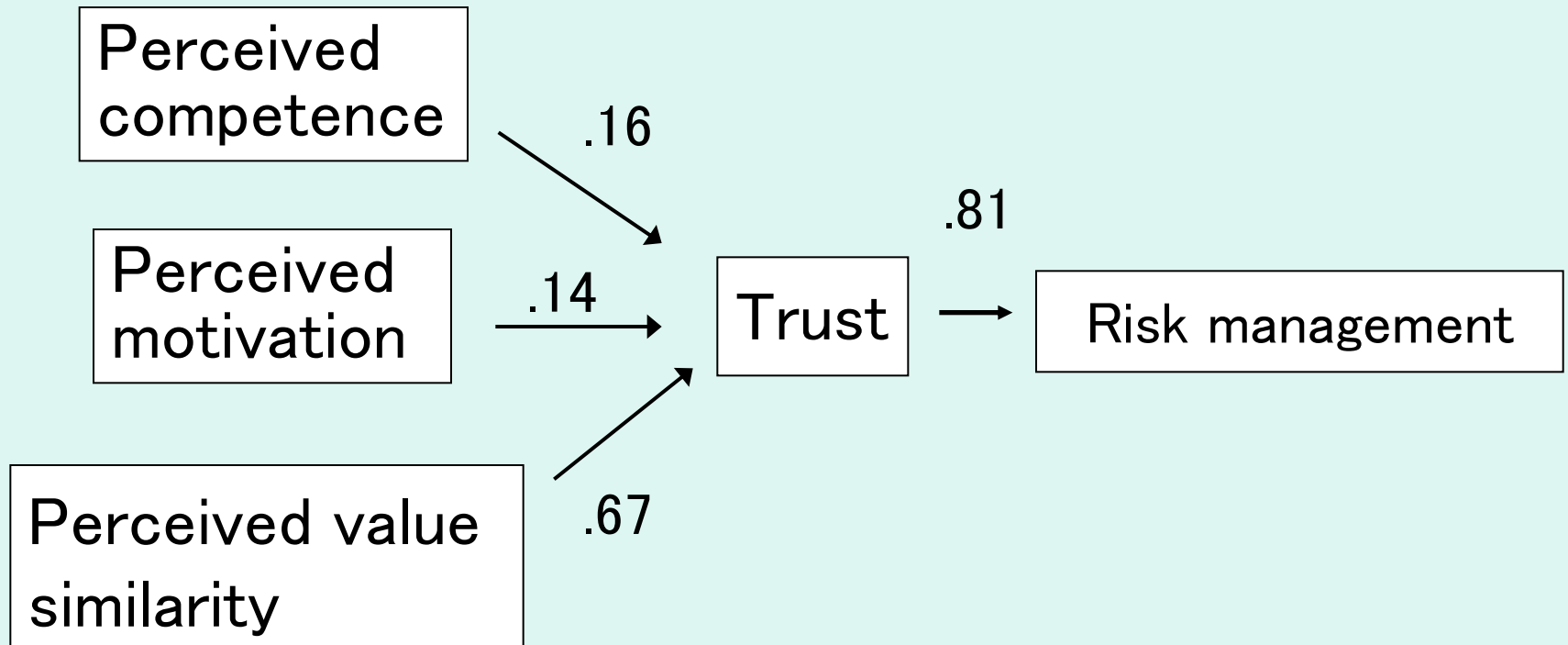
Results

Organization	Mean (<i>SD</i>)
TEPCO	1.62 (.73)
NISA	1.69 (.72)
JR West	2.28 (.79)
FSC	2.30 (.76)
ERI	2.55 (.80)
KEPCO	2.63 (.78)
JR East	2.76 (.80)
MRI	2.91 (.78)

Organizations were sorted by their mean of trust.

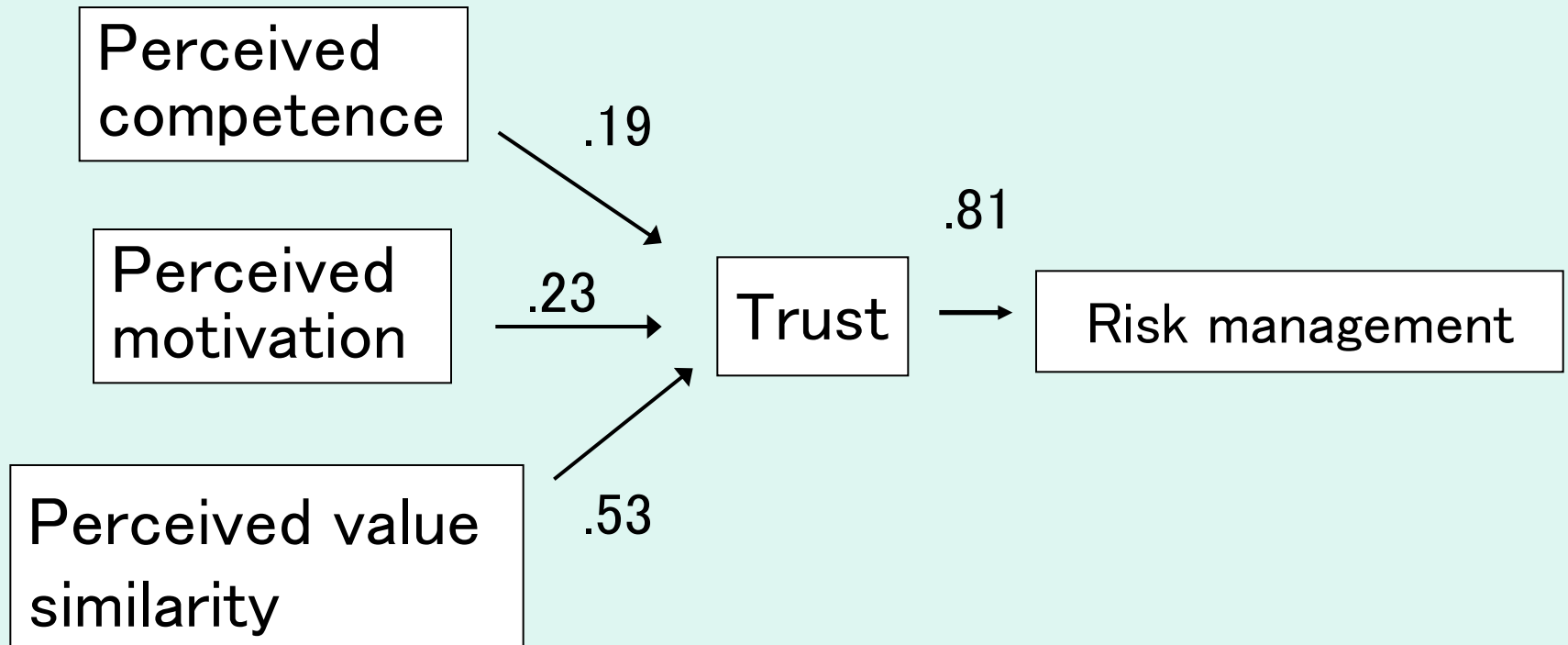
The range of mean is 1 to 5.

(The least trusted)
Tokyo Electric Power Company (TEPCO)

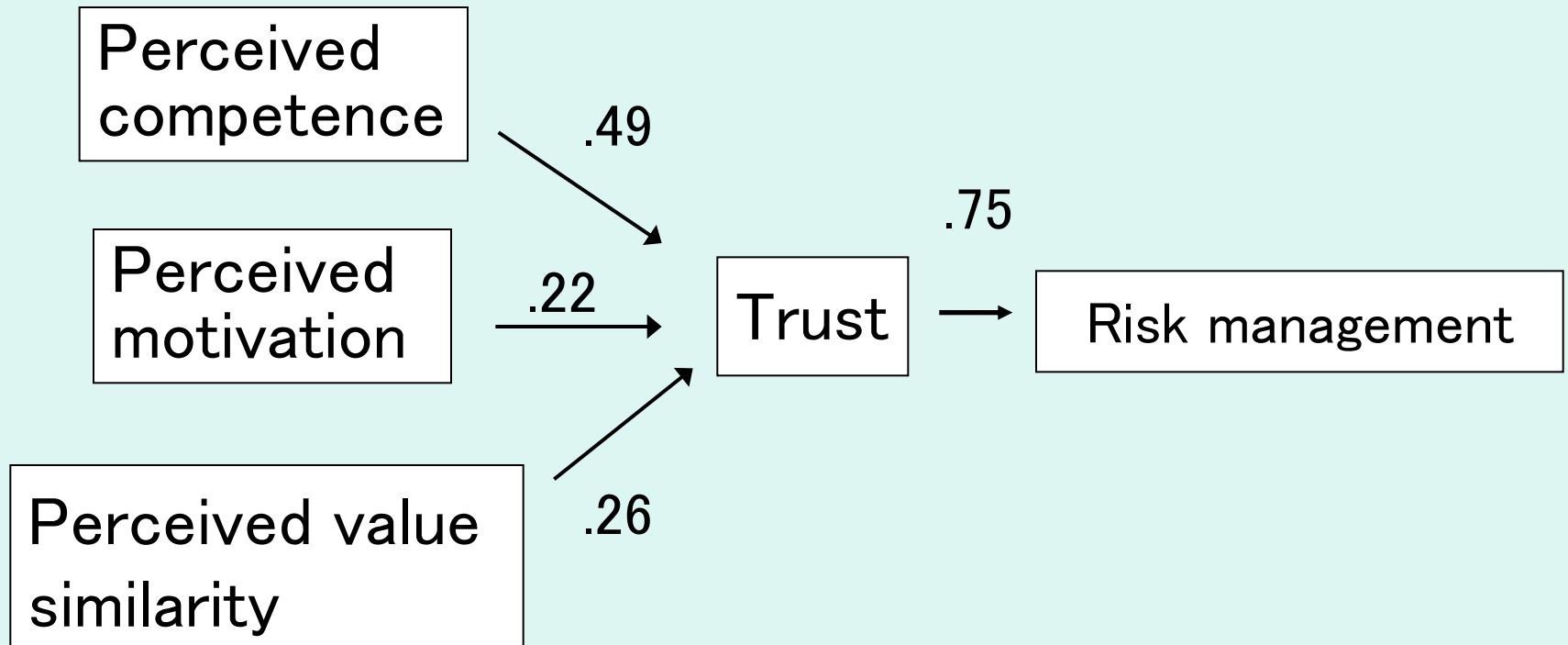


(The 2nd least trusted)

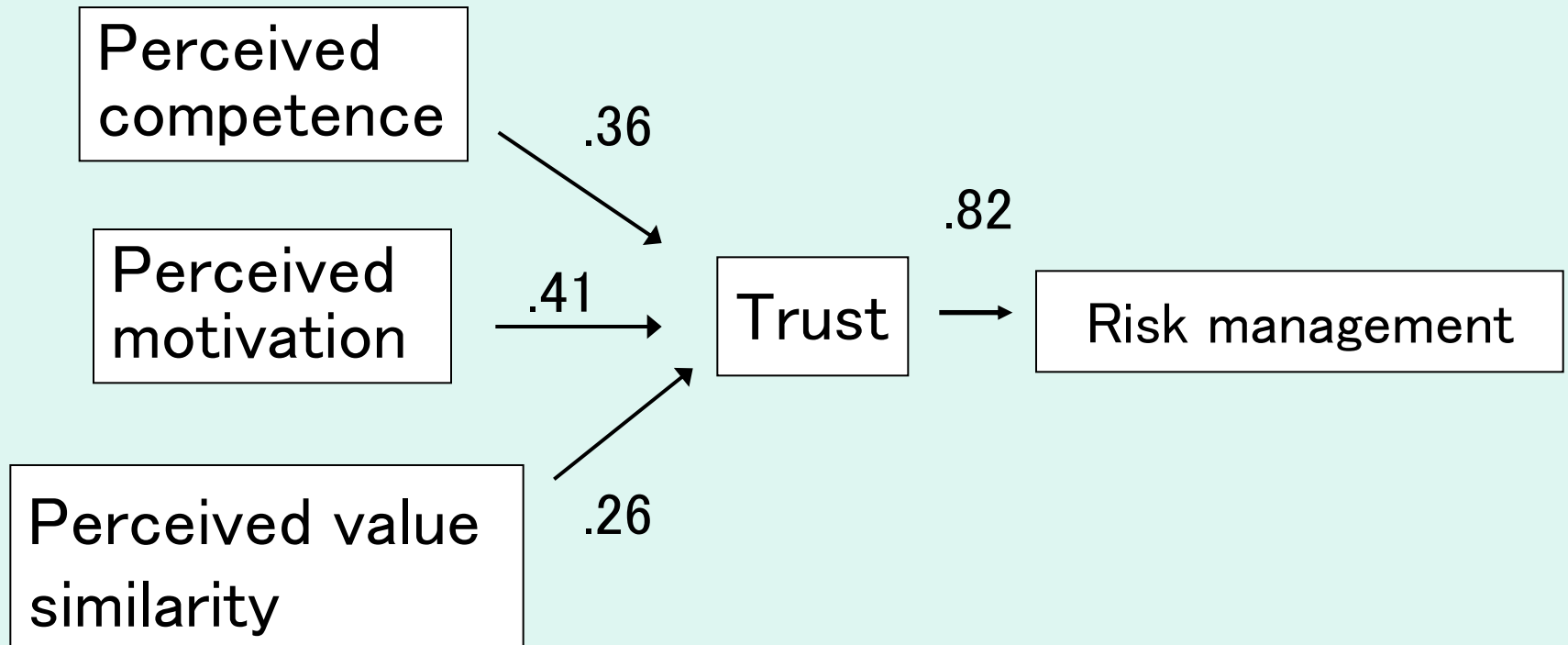
The Nuclear and Industrial Safety Agency (NISA)



(The most trusted)
The Meteorological Research Institute (MRI)



(The 2nd trusted)
East Japan Railway Company (JR East)



The main result

If an entity has less trust, the level of trust depends on acknowledging the same value.

Implications

Opportunities in which the experts and residents share the same value are needed.

It is no use calling attention to an expert's knowledge or technical prowess without first (re)building trust.

Thank you!